SPECIFICATION

Complete specification in pursuance of patent Application no 60/406,987 dated 30th August 2002, filed with a provisional specification

TITLE OF INVENTION

Applicant

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Title of Invention

Vipul's Lifetime Lifeline Permanent Pacemaker and Implantable Cardioverter-Defibrillator

CROSS REFERENCE TO RELATED APPLICATIONS

Herein reference to earlier related application on the same subject (Application no 60/406,987 dated 30th August 2002)

FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not applicable

REFERENCE TO SEQUENCE LISTING, A TABLE, OR A COMPUTER PROGRAM LISTING COMPACT DISK APPENDIX

Not applicable

BACKGROUND TO INVENTION

At current level of technology with Permanent Pacemaker(PPM) and Implantable Cardioverter-Defibrillator (ICD) there are two major problems.

(A) The battery of pacemaker/ICD decides their life and change has multiple problems

It requires an invasive(surgical) procedure and complications associated with an invasive procedure.

Should infection develops it becomes a major problem as lead/leads/pocket etc will have to be sacrificed.

(B) The follow-up of the patient is a problem due to lack of programmer and skilled manpower in remote areas.

BRIEF SUMMARY OF INVENTION

This pacemaker/ICD will have rechargeable battery and either built-in generator or external source will supply the energy for recharge. Thus the same pacemaker box will continue to work and replacement will not required (thus replacement related problems, complications and cost will be avoided).

With every implant the patient to receive a dedicated programming software and some hardware input for remote programming. Thus it will reduce cost of follow-up and will be more useful for the patient. In remote areas they will not be required to travel large distance. Such central remote programming center can offer 24 hour service thus emergency programming will also be easy.

BRIEF DESCRIPTION OF SEVERAL VIEWS OF DRAWING

Figure 1

It shows a PPM/ICD box with built-in generator inside. The magnet is blue and it is surrounded by coil(brown).

Figure 2

It shows the radiological distinct pole (to be localized on skin using fluoroscopy so that an insulated sterile needle can connect it to an outside power source)

Gel like and PVC like material to ensure electrical insulation

Note radiological distinct pole, can of PPM/ICD, gel like material and PVC like material will be in direct contact. The gap in figure is shown for clarity.

DETAILED DESCRIPTION OF THE INVENTION

The PPM/ICD will have a rechargeable battery. It will need energy for recharge. This energy will be supplied by

(A) An internal generator in following way

If in the box of PPM/ICD there is a small magnet (which can rotate). A coil encircles this magnet. When battery is nearing the discharge limit, patient sits inside a large radius, circular coil (it also has a fluoroscopy facility to help in proper alignment with the PPM/ICD box), which can move in multiple planes; in a way that magnet in pacemaker/ICD aligns at center and perpendicular (fluoroscopy guidance). The PPM/ICD box will have radiological markers to help in alignment using the fluoroscopy facility of the large radius circular coil. When current passes through the large radius coil, the magnet starts rotating and generates current to recharge the battery of pacemaker/ICD. It will also require one or more of the following changes.

Disable magnet circuit or magnet shield for rest of circuit or rectangle becomes magnet on demand i.e. electrical magnet.

The arrangement of magnet and coil can also be other way round i.e. magnet outside and coil inside.

(B) Alternatively at the body of pacemaker two radiological distinct poles covered by a gel like insulation (Note gel like insulation is further reinforced by PVC like material) for recharging by an insulated, sterile outside source under full aseptic technique.

When the recharge is needed the skin over the box is used with full aseptic technique. On skin local anesthesia is administered. Using the fluoroscopy the exact location of two radiological distinct poles are identified.

A thick needle is used to create a small hole here.

A fine needle is inserted which goes through the insulation up to the pole for recharging. Above step is confirmed by the fluoroscopy that the needle has reached the exact spot. An insulation is gently pushed on the needle. This insulation has thick terminal end and it compresses the PVC and gel like insulation on the pole on the PPM/ICD box.
Now an insulated connection is established to supply energy from an outside source.
Note the PVC like insulation will not cover the entire surface of the can of PPM/ICD so that it can be used as an anode or cathode.
This system will be useful if the built-in generator malfunctions.

Remote programming
The follow-up of the patient is a problem due to lack of programmer and skilled manpower in remote areas.
Note that a personal computer with multimedia and Internet facility is available in almost all parts of the world.
With every implant the patient to receive
One dedicated programming software written on a non rewritable compact disk. His software will be able to work with the computer mouse/touch screen.
One dedicated telemetry wand which can be attached to widely used IBM/Apple compatible or other computers.
The patient can go to any clinic where a doctor/skilled/semiskilled paramedic is available. He can get connected to the central programming center by an Internet/network connection. The software is on a non rewritable CD so it can not be changed or corrupted. With telemetry wand and software on CD will establish this connection using locally available personal computer for examination and reprogramming. It will make follow-up of patient easy(widely available technology independent of an onsite programmer and trained PPM/ICD engineer), reduce cost(no travel to distances), easy for the patient as no need for distance travel and a center available 24 hours in emergency.